Amendments to the Claims:

Claims 1-13, 15 and 17 are pending in this application. Please cancel claims 1 and 9 without prejudice or disclaimer, and amend claims 2-4, 6-8, 10, 11, 15 and 17 to read as follows.

The following Listing Of Claims will replace all prior versions, and listings, of claims in the application.

Listing Of Claims:

Claim 1 (Canceled)

Claim 2 (Currently Amended): An optical element comprising:

a base having a reflecting surface to be illuminated by light, and ~~a first concave part~~ a rear surface opposite to the reflecting surface, wherein a hole is formed in the rear surface; and

a cooling mechanism, located in the hole ~~first concave part~~, for cooling said base through radiation in a non-contact manner.

Claim 3 (Currently Amended): An optical element according to claim 2, wherein the reflecting surface has an area to be illuminated, and the ~~first concave part~~ hole is located opposite to the area on the reflecting surface.

Claim 4 (Currently Amended): An optical element according to claim 2, wherein said cooling mechanism includes:

a radiation plate provided in the hole ~~opposite to the base~~; and

a Peltier element that cools the radiation plate.

Claim 5 (Original): An optical element according to claim 4, wherein said cooling mechanism has a channel for coolant to flow, and further includes a cooling jacket for recovering heat from the Peltier element.

Claim 6 (Currently Amended): An optical element according to claim 2, wherein said cooling mechanism further includes a heat insulator for preventing the base from absorbing heat obtained by the ~~first concave part~~ hole.

Claim 7 (Currently Amended): An optical element according to claim 2, wherein the base has a ~~second~~ concave part provided at a position different from that of the ~~first concave part~~ hole in a non-illuminated area.

Claim 8 (Currently Amended): An optical element according to claim 7, wherein the ~~second~~ concave part is opposite to the non-illuminated area on the reflecting surface ~~to be illuminated~~.

Claim 9 (Canceled)

Claim 10 (Currently Amended): An optical element according to claim 3, wherein the hole ~~first concave part~~ has a shape that changes according to temperature distributions on the reflecting surface ~~to be illuminated~~.

Claim 11 (Currently Amended): An optical element according to claim 3, wherein the cooling mechanism changes cooling power based on a position according to temperature distributions on the reflecting surface ~~to be illuminated~~.

Claim 12 (Original): An optical element according to claim 2, further comprising a mirror.

Claim 13 (Original): An optical element according to claim 2, further comprising:

a detector for detecting a temperature of said base; and

a controller for controlling said cooling mechanism so that the temperature of said base detected by said detector becomes a predetermined value.

Claim 14 (Canceled)

Claim 15 (Currently Amended): An exposure apparatus comprising an optical system for exposing a pattern formed on a mask or a reticle onto an object, wherein said optical

system includes an optical element, and the optical element includes a base having a reflecting surface to be illuminated by light, and ~~a first concave part~~ a rear surface opposite to the reflecting surface, wherein a hole is formed in the rear surface, and a cooling mechanism, located in the ~~first concave part~~ hole, for cooling said base through radiation in a non-contact manner.

Claim 16 (Canceled)

Claim 17 (Currently Amended): A device fabricating method comprising the steps of:

exposing a pattern on a mask or a reticle onto an object using an exposure apparatus that includes an optical system, wherein said optical system includes an optical element, and the optical element includes a base having a reflecting surface to be illuminated by light, and ~~a first concave part~~ a rear surface opposite to the reflecting surface, wherein a hole is formed in the rear surface, and a cooling mechanism, located in the ~~first concave part~~ hole, for cooling said base through radiation in a non-contact manner; and

developing the exposed object.

Claim 18 (Canceled)